TARGET AUDIENCE: Environmental, Operations, & Engineering Flights

A-GRAM

AIR FORCE CIVIL ENGINEER SUPPORT AGENCY

02-15 **May 2002**

BACKFLOW PREVENTION FOR FIRE PROTECTION SYSTEMS

SYNOPSIS:

Backflow preventors on fire sprinkler systems have received renewed emphasis as many bases are considering whether local backflow requirements apply to their existing fire protection systems. This A-Gram provides an overview on how to deal with the varying Air Force, state, and local regulations regarding backflow preventors on fire protection systems.

AIR FORCE BACKFLOW

AFI 32-1066, Plumbing Systems, defines the Air Force requirement for backflow prevention. Through this AFI, the Air Force adopted the latest version of the Uniform Plumbing Code (UPC). However, it is important to note that this AFI sets specific backflow prevention requirements for fire protection systems that override the UPC requirements for Air Force applications. In paragraph 12.6, AFI 32-1066 specifies that new wet/dry fire suppression systems using only water as a fire suppressant have a double check valve for backflow prevention. New systems that use anti-freeze, aqueous film-forming foam, or other hazardous substances must use a reduced pressure backflow preventor.

BACKFLOW PROTECTION FOR EXISTING FIRE SYSTEMS:

Existing fire protection systems are generally "grandfathered" (exempted) from new system requirements, so long as they met the backflow requirements at the time they were installed. Air Force regulations generally do not require the upgrade of backflow prevention devices on existing fire protection systems.

If there is a valid requirement to upgrade the backflow protection on a fire system, extreme care must be used. The pressure drop caused by the backflow prevention device could degrade the effectiveness of the fire system. It is critical that a fire protection engineer review the design and all submittals. Often, a detailed engineering study of the fire protection system must be accomplished to ensure that the backflow device selected meets the pressure and flow requirements of the system. Failure to do so could cause the fire protection system to malfunction and result in loss of life or serious mission impact.

In some cases, the addition of booster pumps or extensive piping modifications are required to allow the fire protection system to operate with the pressure drop of a backflow device. It is advisable to contact HQ AFCESA fire protection specialists before considering the installation of backflow devices on existing fire protection systems.

STATE/LOCAL GOVERNMENT REQUIREMENTS:

If state or local backflow protection requirements are more stringent than Air Force requirements, and if the local requirements do not exempt federal government installations, then the state/local requirements must be followed.

Verify that a regulator's verbal requirements are backed up by published regulations and do not allow local regulators to hold the Air Force to a higher standard than is enforced in the off-base community (i.e., do not install backflow prevention devices on existing fire systems unless off-base fire systems are also required to be retrofitted with backflow protection).

The contacts below can assist you in interpreting requirements and making decisions on backflow prevention devices.

CONTACT:

Mr. Fred Walker
Chief Fire Engineer
HQ AFCESA/CESM
139 Barnes Drive Suite 1
Tyndall AFB FL 32403-5319
DSN 523-6315 FAX 523-6219
Comm (850)283-6315
e-mail: fred.walker@tyndall.af.mil

Mr. Michael Clawson
Water Systems Engineer
HQ AFCESA/CESC
DSN 523-6362 FAX 523-6219
Comm (850)283-6362
e-mail: michael.clawson@tyndall.af.mil